

**COMPOST MARKETING AND LABELING PROJECT:  
FINAL REPORT AND PHASE 2 PLAN**

Final Report

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## **Abstract and Key Words**

The goal of this project is to expand the market for compost in order to help manage manure and make farms more profitable. To achieve this a label/seal-of-quality was investigated.

With partial funding support from the New York State Energy Research and Development Authority (NYSERDA), the project was carried out by the New York State Association for Reduction, Reuse, and Recycling (NYSAR<sup>3</sup>) in conjunction with the Cornell Waste Management Institute (CWMI) and the Woods End Research Laboratory (WERL). CWMI conducted and analyzed a compost-user survey, interviewed representatives from several other states and a few countries, interviewed 44 farm composting operations, investigated existing label/seal programs for compost, conducted “brainstorming meetings” with stakeholders, and surveyed laboratories to determine capabilities for testing agricultural composts. WERL examined the composting standards of several European countries and assisted in the project.

Development of a seal/label is seen as desirable by New York State agricultural composters. Further investigation is needed to determine the structure of such a program and what organization could provide the necessary administration. Testing of New York State agricultural composts is desirable as a prelude to development of a label/seal program in order to determine the quality of these composts and how the quality relates to consumer needs identified in the survey.

**Keywords:** Compost, Seal, Label, Pathogens

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With appreciation,

Melanie O'Donnell, past president of NYSAR<sup>3</sup>

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## **Summary**

The overall goal of this project is to expand the market for compost in order to help manage manure and make farms more profitable. To achieve this, either a label or a seal-of-quality was proposed in order to distinguish between low and high quality compost products. This in turn would not only make the selection of a product for consumers easier, but they would be more inclined to use compost if they knew they were purchasing a quality product, and could expect that consistency each time. As a result, farms would have a more viable economic means of managing their manure and other farm wastes by reducing costs associated with land spreading (including nutrient management) and obtaining revenues from selling their compost.

With partial funding support from the New York State Energy Research and Development Authority (NYSERDA), the project was carried out by the New York State Association for Reduction, Reuse, and Recycling (NYSAR<sup>3</sup>) in conjunction with the Cornell Waste Management Institute (CWMI) and the Woods End Research Laboratory (WERL). The Cornell Waste Management Institute (CWMI) has close relationships to the New York State composters through numerous other compost-related projects such as workshops, training manuals and videos, composting tours and guidance in starting up successful facilities. In carrying out its role in this project, CWMI conducted and analyzed a compost-user survey, interviewed representatives from several other states and a few countries, interviewed 44 farm composting operations, investigated existing label/seal programs for compost, conducted “brainstorming meetings” with stakeholders, and surveyed laboratories to determine capabilities for testing agricultural composts. WERL examined the composting standards of several European countries and assisted in the project.

Although timing and funding levels did not allow for a statistically rigorous sampling protocol, valuable data were collected. The compost user survey showed that both the home gardeners and industry users (primarily vegetable growers) would like either a label or some form of written material to obtain information about the composts that they are purchasing. Home gardeners also wanted to get information from sales personnel and from Cooperative Extension. Price and results were shown to be a determining factor for the selection of a compost product and ease of use was important to home gardeners. Weed seeds were the biggest concern for both groups, along with inconsistency of product for industry-users. Chemical contaminants and pathogens were also of interest to both groups, although the feedstock source was not a key determinant in product selection. Home gardeners and industry users responding to the survey showed a good knowledge of the potential benefits of compost use. Organic matter, use instructions, pH, N-P-K, and pathogens are the top items that home gardeners would like to see on a label, while pH and N-P-K were the industry users’ top choices.

Information about the current composting practices of 44 New York State farm operations was collected in order to determine the main sources of feedstock, their composting methods and how they are using their finished product. Because of the diversity of feedstocks, it is not easy to define an agricultural compost.

Existing and developing programs from around the U. S. and Europe for testing and labeling composts were investigated to consider their relevance to a New York State label/seal program. This was conducted mainly through telephone interviews, internet searches and a review of states' regulations and guidelines.

New York State agricultural composters who participated in project meetings were strongly in favor of proceeding with Phase 2 testing and development of a labeling program to promote marketing of compost in New York State. They believe that such a program would be important to increasing the market for their compost products. With increased demands to change manure handling practices as a result of new confined animal feeding operations (CAFO) rules and other pressures, they also anticipate an increasingly competitive market place as more organic residuals are transformed into compost. The composters recommended moving forward rapidly, recognizing that there may need to be future adjustments to a program as we learn.

The recommendations are to:

1. Develop and pilot a testing program for New York State agricultural composts.
2. Interpret the results of the testing program and its implications for a label/seal program.
3. Develop and assist in implementing a uniform label that includes the parameters below.
4. Develop guidance for compost use to assist agricultural composters in providing use guidance for their customers.
5. Develop and assist in implementing a voluntary seal program.
6. Work With New York State Dept. Of Agriculture And Markets On Fertilizer And Compost Law And Regulation as Needed to Help Farmers in NYS

## **COMPOST MARKETING AND LABELING PROJECT: FINAL REPORT AND PHASE 2 PLAN**

### **BACKGROUND**

The overall goal of this project is to expand the market for compost in order to help manage manure and make farms more profitable. To achieve this, either a label or a seal-of-quality was proposed in order to distinguish between low and high quality compost products. This in turn would not only make the selection of a product for consumers easier, but they would be more inclined to use compost if they knew they were purchasing a quality product, and could expect that consistency each time. As a result, farms would have a more viable economic means of managing their manure and other farm wastes by reducing costs associated with land spreading (including nutrient management) and obtaining revenues from selling their compost.

With partial funding support from the New York State Energy Research and Development Authority (NYSERDA), the project was carried out by the New York State Association of Reduction, Reuse, and Recycling (NYSAR) created an Organics Recycling and Composting Council (ORCC) in 1999, which is comprised mostly of volunteers. A working group devoted to the review of options for a compost label/seal program was created for this project. The Cornell Waste Management Institute (CWMI) has close relationships to the New York State composters through numerous other compost-related projects such as workshops, training manuals and videos, composting tours and guidance in starting up successful facilities. In carrying out its role in this project, the CWMI conducted and analyzed the results of a compost-user survey, interviewed several other states' and a few other countries' composting councils and regulators, interviewed several farm composting operations, conducted "brainstorming meetings," surveyed several laboratories to determine a budget for the proposed necessary testing, prepared the results of Phase 1 and created a Phase 2 proposal. The Woods End Research Laboratory (WERL) had access to data from a nationally conducted compost survey. WERL also examined the composting standards of several European countries in developing information for this report.

### **SURVEY OF COMPOST CONSUMERS**

In order to determine the needs and wants of consumers of compost, surveys were conducted for both home gardeners and industry-users (mainly vegetable growers). (See Figures 1-23, Appendix A, for survey results.) The survey questions were posted on the Cornell Waste Management Institute (CWMI) Web Site and also distributed at meetings and conferences. The survey



respondents are compost users and not the general public since people were not interested in filling out the survey if they were unfamiliar with compost. Although timing and funding levels did not allow for a statistically rigorous sampling protocol, valuable data were collected. Results have been presented at a number of national and in-state conferences including Biocycle and the U. S. Compost Council and were very well received by the audiences.

The survey showed that both the home gardeners and industry users would like either a label or some form of written material to obtain information about the composts that they are purchasing. Home gardeners also wanted to get information from sales personnel and from Cooperative Extension. Price and results were shown to be a determining factor for the selection of a compost product and ease of use was important to home gardeners. Weed seeds were the biggest concern for both groups, along with inconsistency of product for industry-users. Chemical contaminants and pathogens were also of interest to both groups, although the feedstock source was not a key determinant in product selection. Home gardeners and industry users responding to the survey showed a good knowledge of the potential benefits of compost use. Organic matter, use instructions, pH, N-P-K, and pathogens are the top items that home gardeners would like to see on a label, while pH and N-P-K were the industry users' top choices.

## **BAG SURVEY**

An examination of bags in which composts are marketed in New York State was conducted to see what information was made available to consumers and how it related to the information which consumers want, as ascertained through the user surveys. (Figures 24 and 25, Appendix A). Most bags did not provide information sought by the surveyed consumers. While of interest to consumers, very few of the bags provided information on organic matter, weed seeds or pH. Only half of the bags provided information on N-P-K and none provided information on pathogens. One positive aspect was that almost all provided some form of use instructions.

## **FARM SURVEY**

Information about the current composting practices of 44 New York State farm operations was collected in order to determine the main sources of feedstock, their composting methods and how they are using their finished product (Table 1, Appendix B). It was found that six do not use any manure in their process. Twenty-one farms are taking feedstock, other than wood chips, from off

the farm. These include food processing residuals, grape pressings, dairy waste, food scraps, butcher residuals, paper sludge, fish waste, zoo manure and leaves. Twenty-one farms are co-composting with wood chips. Sixteen farms get tip fees for all off-farm-generated material. This survey also determined that 16 of the farms are selling their product by either bulk or bag. Five farms are working towards selling their end product. Twenty-nine of the farms used a percentage of their compost on-site. Thirty-five of the farms do some or all of the composting in turned windrows.

An additional farm survey was conducted with 20 New York State farm compost managers. The prime focus of this intensive survey was to develop information on the testing which these farms are doing and are interested in having done. Composting methods, feedstock, sources of feedstock, equipment used, type of testing performed, end use, marketing and sales were examined. Of the 20, all used temperature monitoring as an indication of what was occurring in the process. Twelve out of 20 worked to regulate moisture content. Eight out of twenty had N-P-K and pH tested. Regarding metals and pathogens, testing was done infrequently and irregularly, if at all. Most indicated that lack of testing was due to cost and the fact that they were not informed well enough on what they need to test for. All farms indicated an interest in participating in a testing program.

## **EXISTING/DEVELOPING COMPOST LABELING PROGRAMS**

Existing and developing programs from around the U. S. and Europe for testing and labeling composts were investigated to consider their relevance to a New York State label/seal program. This was conducted mainly through telephone interviews, internet searches and a review of states' regulations and guidelines. Data collected from 12 U. S. states and two Canadian shows that only four of the states have some form of a required label.

The table also describes their prevalent forms of composting. Yard waste composting is prevalent in all of the states and provinces. Only four states have an organized form of training for compost operators. The ban of yard waste from landfills and an interest from communities to keep food waste out of landfills is helping to increase composting in many states and provinces. CAFO and nutrient management regulations are helping to increase agricultural composting in a few states. Potential benefits of compost use for disease suppression and replacement of soil fumigants appears to be motivating expanded use of compost in a few other states.

State agencies are supportive of composting in these interviewed states, especially the departments of transportation (DOT) in which many states have specifications for the use of compost in DOT practices. Information was collected on several compost standards, specifications and labeling practices. Requirements such as testing frequencies were found to depend on a range of criteria such as amount of compost produced, a determined number of times per year, the particular feedstock (such as biosolids), when the feedstock is altered, and the particular characteristic being tested such as metals.

Information on what each of these programs requires in regard to testing, both physical and chemical properties, and on applicable standards was also collected. Most states require testing for the same metals and pathogens required as part of the EPA Part 503 sludge rules. Very few items that were deemed important in the consumer surveys such as weed seeds, nutrients and organic matter are required. Not all programs have standards even if they are requiring testing. Almost none of the programs that have a label require that the testing parameters be posted on a label.

Five current quality seal programs are summarized in Table 2 (Appendix B). The programs are the California Compost Quality Council (CCQC), Earth-Wise (Portland, Oregon), the Organic Materials Review Institute (OMRI), the U. S. Compost Council's Seal of Testing Assurance (STA) and the Woods End Research Laboratory's (WERL) Solvita seal. All of these are voluntary programs. CCQC allows all California compost producers to participate and STA and Solvita also allow any producer. The Earth-Wise program is only available to producers using yard waste as the feedstock and OMRI does not allow any non-agricultural industries, sewage sludge or MSW inputs.

All of these programs have some form of required testing program. OMRI, STA and Solvita require the producers to collect the samples while CCQC and Earth-Wise have trained technicians that take samples. All of the programs except OMRI have specifications for the compost analyses. CCQC and STA have developed their own (the CCQC Laboratory Practices Manual for CCQC and the Testing Methods for the Examination of Composting and Compost for the STA) while Earth-Wise uses the Oregon State University Laboratory and Solvita testing is carried out at WERL. CCQC, STA and Solvita require testing on an amount-produced basis while Earth-Wise samples twice per year and OMRI requires once a year testing. Earth-Wise and Solvita have standards for all of their testing parameters. CCQC and STA only have standards for metals and

pathogens. OMRI has standards for pathogens and foreign material. Only Solvita's standards are use-specific. Compost producers participating in the CCQC, STA and Solvita programs must make their laboratory results available if requested by the consumer. OMRI requires that feedstock be disclosed. Most Earth-Wise producers display their results at the cash registers where the products are sold. STA producers must supply use guidelines while the Solvita program separates the participant's composts into use categories, depending on the laboratory results. The Earth-Wise program and Solvita charge the same price to all while CCQC bases the fee on volume of compost produced. OMRI bases the fee on annual sales of the producer and the type of product. The fee for CCQC, Earth-Wise, and Solvita programs cover both administration and laboratory analytic costs (Portland subsidizes half of the cost for Earth-Wise participants.). CCQC is administered by California's Compost Council. Earth-Wise is administered by the Portland Metro government. OMRI and Solvita are administered by private organizations and STA is administered by the U. S. Compost Council. They all have various forms of advertising including brochures, websites, conferences, telephone hotlines, and published participant producer lists.

A program such as Solvita that provides guidelines based on the results of the laboratory analyses (use specific standards) may be a useful model for New York State. Such a program could accommodate the many different feedstocks that are used by agricultural producers and also compost producers that may not want to highly invest in specialized screening equipment or more land area for curing.

The director of the 34 food waste composting systems for the New York State prison system was also contacted. He has decided to use the sampling and testing protocols of the Solvita seal program. The compost is not for sale, but he trusts the protocol of this seal program to guarantee that a safe, quality compost is being produced.

The value of seal or label programs is an important question. Three participants of other current label/seal programs were interviewed to determine if the value of their compost increased after joining the program. Two interviewees belong to the California Compost Quality Council's (CCQC) seal program and one belonged to the Portland, Oregon Earth-Wise program. The responses were quite similar from all producers. They have not been able to sell their compost for a higher price, but they all are enjoying a network that provides a lot more referrals for their products, i.e., expanded markets. One of the CCQC members reported that other producers that weren't able to sell their product before are able to now that they participate in the CCQC

program. Landscapers and farmers that were unsure of compost quality before, now know the guidelines published by the CCQC and because of the required disclosure of the laboratory results, feel they can trust these products now. Also, agencies such as the California Department of Transportation (CALTRANS) are beginning to specify that CCQC-approved composts must be used in their projects. A similar endorsement of New York compost the NYS Department of Transportation may also be appropriate.

In addition to the seal programs in the U. S., a variety of programs are used in Europe. These European programs are similar in many ways to those U. S. programs described in Table 5 and provide further support for the feasibility of implementing a compost label/seal program in New York State. Further information about these programs can be found in the WERL report on European systems which can be found through the CWMI WWW site ([www.cfe.cornell.edu/wmi](http://www.cfe.cornell.edu/wmi)).

## **PRICE OF AGRICULTURAL COMPOSTS**

As stated above, 16 of the 44 New York State farms interviewed are already selling their product and five plan to start selling (others either apply to their fields and do not have enough to sell or are just starting to set up their operations). The farms that are currently selling in bulk are receiving prices in the range from \$10/cubic yard - \$30/cubic yard with an average amount of approximately \$21. There is no reason to assume that the composters that want to begin selling would not be able to achieve that range also. According to Composting News, the average amount received for bulk manure compost products in the Northeast is \$15.50/cubic yard. The range is \$5/cubic yard - \$20/cubic yard. However, yard-trimming composts are able to achieve \$30/cubic yard as their high end of the range. There seems to be a misconception that yard waste composts may be more beneficial when in fact, manure composts are able to provide such benefits as more nutrients, weed suppression and plant disease suppression. It could be that with a labeling program that educates the consumers, manure composts would be able to achieve that upper range also.

## **NEW YORK STATE CONSIDERATIONS FOR A LABELING PROGRAM**

A meeting was held at NYSERDA's office in Albany on July 6, 2000 to get input from stakeholders. Based in part on the farm survey mentioned above which made it clear that co-composting a mix of materials is prevalent, it was concluded that there was no way to easily

distinguish between agricultural and non-agricultural composts. This brought about discussion of what/who should be allowed to participate in an agricultural compost label/seal program. Most agreed that farms that take other organics to supplement their manure and composters, not necessarily located on a farm, but still helping farmers to manage their farm wastes, should also be included. Additionally, it can be argued that compost is essentially an agricultural product since it is used to amend soils to improve plant growth. Several options for a label were brainstormed. It was decided that CWMI would put together a matrix of possible options (Table 3, Appendix B).

A table containing the matrix of devised possible options and the table of other current seal programs previously mentioned, were sent out for review by members of NYSAR<sup>3</sup> ORCC, NYSERDA, agricultural composters, extension agents, the New York State Department of Agriculture and Markets (NYSDAM), Empire State Development, and the New York State Department of Environmental Conservation (DEC). These options were discussed at the November 16, 2000 Innovations in Agriculture Workshop cosponsored by NYSERDA, NYSDAM, the New York State Farm Bureau and the U. S. Department of Energy. **The agricultural composters at the composting breakout session were strongly in favor of proceeding with Phase 2 testing and development of a labeling program to promote marketing of compost in New York State.**

## TESTING OF COMPOSTS

In preparation for Phase 2, a survey was sent out to 11 labs around the U. S. to determine costs and capabilities for conducting analyses to determine the current quality of New York State composts. The list of analytes was constructed from the survey of other programs, from the survey that indicated what consumers deemed as important and from discussions with stakeholders. Since weed seeds were the highest concern of both home gardeners and industry users and few labs were able to provide this test, a weed scientist at Cornell University (Toni DiTomasso) was contacted to discuss methods for analyzing and testing for viable and dormant weed seeds in composts.

Fortunately the U. S. Composting Council has been developing testing methods for composts. The product of over six years of work by a committee of compost experts, their Test Methods for the Examination of Composting and Compost (TMECC) manual is about to be released. The methods in the manual will be followed in the sampling and analysis of composts in Phase 2.

## **PHASE 2 PLAN**

As evidenced by the strong positive response at the November 16, 2000 workshop as well as previous meetings and contacts, the agricultural composters in New York State want to see a compost labeling and seal program developed in New York State. They believe that such a program would be important to increasing the market for their compost products. With increased demands to change manure handling practices as a result of new CAFO rules and other pressures, they also anticipate an increasingly competitive market place as more organic residuals are transformed into compost. The composters recommended moving forward rapidly, recognizing that there may need to be future adjustments to a program as we learn.

The recommendations (discussed more fully below) are to:

1. Develop and pilot a testing program for New York State agricultural composts.
2. Interpret the results of the testing program and its implications for a label/seal program.
3. Develop and assist in implementing a uniform label that includes the parameters below.
4. Develop guidance for compost use to assist agricultural composters in providing use guidance for their customers.
5. Develop and assist in implementing a voluntary seal program.
6. Work With New York State Dept. Of Agriculture And Markets On Fertilizer And Compost Law And Regulation as Needed to Help Farmers in NYS.

Phase 2 will involve the Organics Recycling and Composting Council of NYSAR<sup>3</sup>, CWMI and WERL and engage stakeholders, primarily the agricultural composting industry. All aspects of Phase 2 will be discussed among stakeholders to help develop the testing and labeling program. Some of the needed feedback will take place at meetings and conferences. A special effort is anticipated to receive the feedback from additional farm composters. A proposed means is hosting a farm tour of composting operations.

More specific Phase 2 plans are described below. These six items will not necessarily be carried out sequentially.

### **1. Develop And Pilot A Testing Program For New York State Agricultural Composts**

The Phase 2 testing program will be a pilot to test the way in which a seal program will work with participants responsible for collecting representative compost samples; having them subjected to appropriate laboratory analyses; and submitting them to the appropriate organization/agency. It

will also provide critical data about the quality of New York State agricultural composts which is needed to ensure that the seal program is promoting products of a quality which will meet consumer needs. A preliminary smaller-scale analytic effort will be undertaken (as described below) to be followed by a survey of 20-30 New York State farm composts. The testing program will be modified as agreed to by NYSERDA, and the Organics Recycling and Composting Council of NYSAR<sup>3</sup>, CWMI and WERL as necessary based on what is found in the preliminary study.

The quality of the compost products at the time they are delivered to compost users is of greatest importance. Time of sampling is important since qualities such as organic matter content, weed seeds and pathogens may change over time. Spring is the prime time for compost use, thus testing compost samples during spring 2001 is proposed. Thirty New York State farms will be identified which represent a range of composting operations. One criteria for selection is manure (either dairy or poultry) as one of the main feedstocks. The testing will include some farms that co-compost with yard trimmings and/or food scraps and will represent an assortment of composting methods. The 20 farms in the testing survey conducted in Phase 1 are likely candidates as are the farms participating in NYSERDA's agricultural waste management projects.

#### **Preliminary Study: Variability of Sampling**

Objective: Sample compost from seven composters. The variables will be: two different sample takers (2) for two different sampling dates (2) and two additional sampling dates with samples taken only by the farmer/composter. In addition samples will be analyzed from three compost operations that are bagging products. See **Preliminary Study Ag Compost Sampling Plan** on page 11 for sampling schedule.

A one day development/training session will be held at a farm compost operation prior to initiation of sampling. The Study Team (including participants from CWMI, WERL and NYSERDA) will meet in a central location to review and standardize sampling methods. Then an instruction sheet will be provided to the seven farmer/composters. This instruction sheet would be similar to that which will be sent to a composter participating in the seal/label program once it is developed. These instructions will be reevaluated based on the finding of the preliminary study and will be modified as necessary.



One set of samples at each farm will be taken four different times by the farmer/composter who receives the instruction sheet. On two of the four sampling days, another sample will be taken by a member of the Study Team who will have been exposed to significantly more information regarding sampling. The composter will be asked to have a sample already taken on that same day to give to the Study Team member when they arrive on site. The Study Team member will obtain a sample when on site and will ask that the farmer NOT be present when they sample so that the farmer will not be influenced in their subsequent sampling. This same strategy will be used to obtain a second set of samples of the same batch of compost within approximately two weeks. A third and fourth set of samples will be taken by the farmer/composter on two additional dates. Four dates are used, reasonably close to each other, to obtain “replicate” sets to look at issues of non-homogeneity and of sampling bias from day to day. In addition, where operations are bagging product, four bags will be sampled with each sample kept separate and the batch from which the bags are processed will be sampled if available (assume three operations are bagging, four bags are sampled from each one time for a total of 12). Sampling and analytic procedures outlined in the U. S. Compost Council TMECC manual will be followed.

Analysis of variance (ANOVA) will be used to analyze the data. If the average results for all analytes and sampling persons and dates scores within a 90% confidence level, then the study will proceed. If the results score less than 90% (this will have to be carefully analyzed, since one or other individual tests might score badly, but others not) then a secondary study will be undertaken to determine the grounds for the variability and/or consultations with NYSERDA will be undertaken to determine how to proceed.

Timing: Samples will be taken as early as “finished” compost is available and weather permits. Hopefully in March/April 2001. Analysis will take approximately three weeks. Interpretation of data and discussion of results and determination of next phase will take one month. The goal would be to be able to obtain samples for the full study in late spring 2001, but this may not be feasible.

The estimated cost for the sample shipping and laboratory analysis for the Preliminary study is \$23,368. This does not include personnel and travel costs of sample collection or data interpretation.

### Preliminary Study Ag Compost Sampling Plan

Farms	sample takers	# of events	# samples
7	2	2	28
7	1	2	14
			42
Bag operations		# bags	
3		4	12
Total samples in preliminary study			54

Analytes	cost/sample	# samples	cost
organic matter			
inerts			
pH			
salts/cond			
NPK			
maturity			
cress test			
fecal coliform			
weed seeds			
selected metals			
package cost	\$ xxx	54	xxx
Johnes	\$ xxx	54	\$ xxx
Test to be determined			
selected herbicides	\$ xxx	est. 8	\$ xxx
dormant weed seeds	\$ xxx	est. 8	\$ xxx
Total Est. Analytic Cost for Prelim study			\$ xxx
plus shipping	\$ xxx	54+54+8+8	\$ xxx
<b>Total cost for testing Preliminary Study</b>			<b>\$ xxx</b>

### Full Study. Compare composts analyses from various composters.

Objective: Four samples each from 30 New York State agricultural composters will be taken so that approximately 3-4 compost source-material types and compost processing strategies are

represented. Where available, samples are taken from each compost facility to account for batch differences. The samples will be batch identified according to the composters operations plan. See **Full Study Ag Compost Sampling Plan** sampling schedule on page 13.

The compost types will be selected to include a minimum of three samples per group, enabling ANOVA to be performed on the results. A group is defined as a type of composter based on both input materials and compost processing; i.e. hen-manure (predominant); dairy-manure; dairy-manure with yard-waste, etc. and type of process; i.e. turned outdoor windrow, windrow following anaerobic digestion, static forced air.

The estimated cost for the sample shipping and laboratory analysis for the analyses is \$47,570. This does not include personnel or travel costs associated with sample collection or data interpretation. Nor does it include testing for herbicides. It includes testing for dormant weed seeds in 10 samples for which the less exacting weed seed germination test showed no weed seeds present.

**Analytes: (Test methods, TMECC or EPA SW846)**

Organic matter, inerts, pH, salts (conductivity) N-P-K, maturity, cress test, fecal coliform, Johnes bacteria, weed seeds, dormant weed seeds on selected samples, selected metals, and possibly selected herbicides. Sampling and analytic procedures outlined in the U. S. Compost Council TMECC manual will be followed.

These parameters are selected because they are important to compost users. As an indicator of the degree of reduction in pathogens resulting from composting of manure, the finished composts will be tested for *Mycobacterium paratuberculosis*, the bacteria responsible for Johnes's disease which is a common disease in dairy herds. This bacteria is shed by infected animals into their manure. It does not multiply in the environment and is relatively more difficult to destroy than other common bacteria. Testing methods are available at reasonable costs, all of which make it a good indicator of the ability of the composting process to destroy pathogens originating in manure. It is likely that agricultural composts will contain low levels of metals (with the possible exception of copper). Verifying this assumption will help provide a market advantage for these agricultural composts. Where selected metals or other contaminants or undesirable qualities are found, management advice regarding amelioration will be useful in achieving desired product quality. (For example,

high copper might result from practices regarding disposal of hoof dip and advice regarding alternative management could improve compost quality. High pathogen levels could result from cross contamination of compost with fresh manure, so advice regarding handling could minimize this.)

### **Full Study Ag Compost Sampling Plan**

Farms	# of events	# samples		
30	4	120		
Analytes	cost/sample			
organic matter				
inerts				
pH				
salts/cond				
NPK				
maturity				
cress test				
fecal coliform				
weed seeds				
selected metals				
package cost	\$	xxx	120	\$ xxx
Johnes	\$	xxx	60	\$ xxx
Test to be determined				
selected herbicides	\$	xxx	10	\$ xxx
dormant weed seeds	\$	xxx	10	\$ xxx
plus shipping	\$	xxx	120+120+20	\$ xxx
Total cost for testing or 30 farm composts			\$	xxx

## **2. Interpret The Results Of The Testing Program And Its Implications For A Label/Seal Program**

The pilot testing program will provide information enabling the refining of the testing program that will be part of the seal program that is created. Feedback will be obtained from stakeholders on issues regarding the enrolling of composter participants, sample taking and handling, laboratory interface, and management of results. In addition to these items, interpretation of test results will

provide a characterization of the quality of New York State agricultural composts. It will allow for refining of the list of parameters that the seal program should require. For example, testing for metals might be reduced or eliminated if the composts consistently show low levels. It will also provide the data needed by the individual composters to assess the range of potential uses for which their product is suited. They will be able to compare the test results for their product with the use guidance. Where there is not a good match between the end market to which they are addressing their product and the quality as tested, it will help them figure out the changes needed.

### **3. Develop And Assist In Implementing A Uniform Label That Includes The Parameters Below**

A uniform label on a product bag and/or a written sheet is needed to give consumers information about the compost product. The label might resemble the nutrition label that is now familiar to consumers. Information on the label would likely include; feedstock, contact information for the producer, pH, N:P:K, pathogens, stability/maturity, seed germination (only if claimed to be suitable for starting seedlings), organic matter content, weed seeds, salinity, % foreign materials, and possibly metals. In addition the label would indicate the uses for which the product is appropriate as designated by the compost producer.

### **4. Develop Guidance For Compost Use To Assist Agricultural Composters In Providing Use Guidance For Their Customers**

Consumers, particularly home gardeners, want information on the use of the compost products they purchase. Different composts have different characteristics (such as pH) which make them more suitable for certain uses than others. Phase 2 will include developing guidance for New York State agricultural composters on the relationship between the potential end uses and compost qualities to assist them in developing the use guidelines for their products.

### **5. Develop And Assist In Implementing A Voluntary Seal Program**

Phase 2 will entail further work to get the seal program off the ground. The seal program as currently conceived based on Phase 1 results would be voluntary. It would be open to composters managing source separated organic residuals (not including sewage biosolids). If the seal program is administered by NYSDAM, it would be restricted to “agricultural” composts, which would need to be defined. As currently envisioned, the seal program would require participants to test their product on a regular basis, submit test results, and label their product as discussed above. It is not anticipated that there would be quality standards. However, composters would compare their results to guidelines developed in #4 above and would provide use guidance for their customers based on these results.

Phase 2 will explore the feasibility of administration of a seal program by various entities. One possibility is NYSDAM as part of the Pride of New York program. Currently this program requires a one-time \$25 registration fee. Criteria for obtaining the seal for a compost would be developed by the agricultural compost industry as part of Phase 2. It is possible that a change in regulations or legislation would be needed. Other entities to be explored as either administering the program or participating with NYSDAM in its administration include Cornell Cooperative Extension or another part of Cornell University, NYSAR<sup>3</sup>, Empire State Development, Northeast Organic Farming Association (NOFA and WERL).

#### **6. Work With New York State Dept. Of Agriculture And Markets On Fertilizer And Compost Law And Regulation as Needed to Help Farmers in NYS**

Current law in New York State includes regulation of fertilizers under NYSDAM. The relationship of this law and subsequent regulations to compost products are a concern to farmers trying to market composts. Claims regarding fertilizer value of composts would subject them to these rules, which are not designed to address the particular qualities and uses of composts. Revisions to those rules as well as the potential development of legislation and regulations specifically tailored to composts need to be considered. Nationally, the Association of American Plant Food Control Officials (APPFCO) is considering just these issues in the development of model legislation. As part of the Phase 2 activities, the relationship between a seal program in New York State and applicable laws and regulations will be examined and suggestions prepared to remove barriers to implementing a seal program. Because composts also are sold across state boundaries, the potential to harmonize such rules across the northeast will be explored in conjunction with the Northeast Recycling Council.

#### **Timeline**

Spring 01:	Conduct Preliminary Study
.....	Begin work on items 3-6
Late spring/summer	
.....	Conduct first round of full testing
.....	Continue work on 3-6
Fall .....	Conduct second round of testing
.....	Continue work on 3-6
Winter..	Analyze/interpret results
.....	Finalize project